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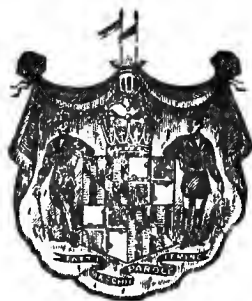


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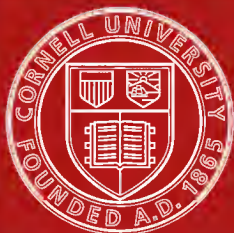


MARYLAND AND ITS NATURAL RESOURCES

PREPARED BY
THE MARYLAND GEOLOGICAL SURVEY
WM. SULLOCK CLARK, STATE GEOLOGIST

BALTIMORE

1901



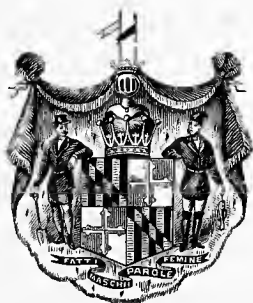
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INTRODUCTION.

The State of Maryland possesses more than ordinary interest on account of its situation, distribution of land and water, and surface configuration. It is the most northern of the Southern States, and is situated between the parallels $37^{\circ} 53'$ and $39^{\circ} 44'$ north latitude and the meridians $75^{\circ} 4'$ and $79^{\circ} 30'$ west longitude, the exact position of the western boundary being still undetermined. The boundaries of Maryland are based upon both arbitrary locations and geographic features. According to the early grants they were clearly defined, but different interpretations of various restrictions, such as "the land hitherto unsettled," and the situation of local points like "the first fountain of the Potomac," have led to disputes, some of which are still open. The northern, as well as parts of the eastern, southern and western limits, are conventional lines, of which the best known is the "Mason and Dixon Line."



CROWN-STONE.

The **northern boundary**, known as the **Mason and Dixon Line**, which became famous later as the boundary between the free and slave-holding States of the North and South, was, according to an agreement made in 1732, to run due west from Cape Henlopen (fifteen miles south of the point now known by that name) to the middle of the peninsula of the Eastern Shore, thence northward tangent to a circle of twelve miles radius—whose center was at New-castle, Delaware—and then due north from the tangent point until it reached a parallel of latitude fifteen miles south of the southernmost part of Philadelphia. From this point the line was to run due west. Surveyors had already determined the position of the "center of the peninsula," the north and south line, and the "tangent point," when Charles Mason and Jeremiah Dixon, noted English astronomers and mathematicians, arrived in Philadelphia in 1763. From their arrival until December, 1767, Mason and Dixon were busy locating the "southernmost part of Philadelphia" and the northern boundary of the State, which they surveyed and marked as far as Dunkard Creek, West Virginia, where they were stopped by the Indians. Along the greater portion of this line each mile was marked by a stone monument, which had the letter "P" engraved on the northern side, and the letter "M" on the southern side, while at each fifth mile was a similar stone, known as the "crown-stone," with the coat of arms of the Penns cut on the northern face and with that of Lord Baltimore on the southern. These stones were brought from England. Some of the original monuments remain in good condition, but many have become dilapidated or been removed. The line is now being relocated by a Commission composed of representatives of the States of Maryland and Pennsylvania and of the United States Government.

The **southern boundary**, long in dispute, was permanently settled in 1877, as far as the Maryland-Virginia portion is concerned, by a board of commissioners appointed by the States of Maryland and Virginia. According to their agreement the boundary line follows the low-water line on the right bank of the Potomac River to Smith's Point at its mouth, thence northeasterly across Chesapeake Bay to the southern end of Smith's Island, and thence to the middle of Tangier Sound. Here the boundary runs south $10^{\circ} 30'$ west, until it intersects a straight line connecting Smith's Point and Watkins' Point. From this intersection the line runs to Watkins' Point, and thence eastward through the center of Pocomoke Sound and Pocomoke River until it reaches the westward prolongation of the old Scarborough and Calvert line surveyed in 1688, which it follows to the Atlantic Ocean. There is still some controversy as to the exact location of some of the boundary marks. The States of Maryland and West Virginia have not yet determined the western terminus of this line.

The **western boundary** of the State has not been finally settled. According to the early grants, this line should run due north from the head of the Potomac River. The North Branch was early regarded as the head of the river, but later surveys show that the South Branch is longer than the North Branch. The "Fairfax Stone" supposed to be placed at the westernmost source of the North Branch has been recently shown not to be at the head of that stream. Its real source is about one mile farther west, and this point has been recently marked by the State of Maryland with a monument known as the "Potomac Stone." The questions at issue are now before the Supreme Court of the United States.

The extreme width of the State from east to west is 240 miles, and the extreme length from north to south 125 miles, the latter, however, narrowing toward the west where it becomes less than three miles at Hancock. Beyond this point it again broadens. The total area within the limits of the State is estimated at 12,210 square miles, of which 9,860 square miles are land. The remaining 2,350 square miles are water, distributed as follows:



SWALLOW FALLS, YOUGHIOGHENY RIVER.

Chesapeake Bay, 1,203; Chincoteague Bay, 93; smaller estuaries and streams, 1,054 square miles.

The State of Maryland, lying midway between the North and South, and stretching as it does from the Atlantic Ocean to the crest of the Alleghanies, with the great estuary of the Chesapeake Bay and its tributaries extending far into the land in all directions, possesses many advantages over neighboring commonwealths. There is probably no State of equal size in the Union that has such a variety of natural resources in its agricultural and mineral output, and in its sea and bay products of every description, while its central location and numerous natural highways of commerce and trade render this native wealth of the greatest importance to the material prosperity of the people.

TOPOGRAPHIC FEATURES.

The State of Maryland in its physiographic features is closely related to the states which lie to the north and south of it. It is part of the eastern border region which stretches from the Atlantic coast-line to the crest of the Alleghanies, and from its central situation affords, perhaps, the most characteristic section of this broad belt. The country rises from the sea level at first gradually and then more rapidly until it culminates in the high lands of the western portion of the State. It has been divided into three physiographic areas known respectively as the Coastal Plain, the Piedmont Plateau and the Appalachian Region.

The **Coastal Plain** is characterized by broad, level stretches of slight elevation, deeply indented with tidal estuaries and bays that admit to navigation, as at Baltimore and Washington, vessels of the largest tonnage, while smaller craft can load at almost every commercial center in the district. The



ELK NECK, AT HEAD OF CHESAPEAKE BAY.

Piedmont Plateau, which borders the Coastal Plain on the west and extends thence to the foot of the Appalachian Mountains, is a broken, hilly country of undulating surface, divided by Parr's Ridge into two quite distinct districts. The **Appalachian Region** is an area of high lands, characterized by parallel, even-topped ranges, the continuity of which is frequently interrupted. Between the ridges are numerous valleys drained by rapidly flowing streams.

The variety of surface configuration is so pronounced that every type of land is afforded from the low-lying plain bordering the tidal estuary to the high mountain slope reaching more than 3,000 feet in altitude. These varied physical features have influenced to a large degree the character of the people and their pursuits, which are clearly recognized as one passes from the eastern to the western counties of the State.

THE CLIMATE.

The climate of Maryland is as varied as its surface configuration, and is to a considerable extent dependent upon the latter. These climatic differences are also due to the nearness of large bodies of water, such as the Atlantic Ocean and the Chesapeake Bay. The climate of most of the State has the healthfulness common to the eastern part of the United States, and in character is midway between that of Maine and that of Florida. In the eastern and southern parts of the State the winters are mild and the summers hot, while in the western and more elevated portions the winters are quite cold and the summers delightfully cool. The so-called "climatic changes" depend upon differences in temperature, precipitation, winds, humidity and barometric pressure.

The average **temperature** for the year varies materially in the several sections of the State, the temperature of the northern and western divisions, which ranges from an average of 27° in winter to 70° in summer, is several degrees lower than that of the southern and eastern divisions, where the temperature for winter is on the average about 40° and for summer 77°. In general the average temperature of Southern Maryland is 2° higher than that of Baltimore, while the temperature of the country to the north and west of the city decreases as the elevation of the land becomes greater. In the western part of the State the valleys are slightly warmer than the mountains, but are more liable to early frosts.

The **precipitation** of moisture in Maryland occurs in the form of rain, snow and hail, usually the first, especially in the southern and eastern parts of the State. There are no distinctly wet and dry seasons, as in tropical countries, but careful observations show that there is more rain in the spring and late summer than in the autumn and winter. There are also special areas where there is considerable rainfall, and others in which the precipitation is slight. The records show that the areas of greatest rainfall are on the eastern slope of the Catocin Mountain in the Frederick Valley, and along the shores of the Chesapeake Bay between Cambridge and Annapolis; while the areas of least precipitation are between Denton and Westminster and in the mountainous counties. The annual precipitation in the State varies, according to localities, from 25 to 48 inches.

The **winds** in Maryland generally blow from the west, but during the summer they come more from the south, and in the winter more from the northwest and west, especially in the eastern and central portions of the State. In the mountainous regions of Western Maryland the winds are more commonly from the northwest and west throughout the year.

THE FLORA AND FAUNA.

The native plants of Maryland are not unlike those of Virginia and Pennsylvania, and the range within the State is wider than that between adjacent areas in neighboring states. The most prominent trees are oak (12 species), hickory (4), pine (4), poplar, maple (3), locust, chestnut, cypress, red cedar, beech and wild cherry. Among the wild fruit trees are the persimmon, the service berry and Chickasaw plum. The various sorts of grape-vine, the Virginia creeper, greenbrier, and morning glory are common climbers in the State, while the wild strawberry, blackberry, raspberry, blueberry, huckleberry, dewberry and cranberry, all very abundant, repre-



ON WILLS MOUNTAIN.

sent the native small fruits. Besides these larger or fruit-bearing plants there are countless others which carpet the ground in rapid succession from early spring until late autumn.

The animal life in Maryland is abundant, but does not show a great variety of the larger forms. Deer, black bears, and wild-cats are sometimes taken in the wilder portions of the State. Usually, however, the mammals are represented only by such animals as the ground-hogs, rabbits, skunks, weasels, minks, otters, opossums and squirrels. Snakes are abundant, but most of the species are harmless. The

copperhead and the rattlesnake are the most common venomous snakes, the former being the more vicious and dangerous.

The waters of the Chesapeake Bay abound in shad, herring, menhaden, mackerel, crabs, terrapin and oysters. Among the ducks which frequent Chesapeake Bay are the canvas-backs, red-heads, bald-pates, mallards, black-heads and teal; while the land birds include the reed-bird, partridge, ruffed grouse (or "pheasant"), woodcock, snipe, plover and Carolina rail.

The smaller song and ornamental birds are very numerous and include many thrushes, wrens, swallows, sparrows, nighthawks, wild doves, and the "Baltimore oriole." Woodpeckers, owls, hawks, turkey-buzzards and crows are also numerous.

HISTORICAL SKETCH.

Maryland was settled by a party of Englishmen under Leonard Calvert, who left the mother country in the "Ark and Dove" in 1633, and finally landed near the mouth of the Potomac, on the shores of St. Mary's River, in 1634. The proprietor, Cecilius Calvert, second Baron of Baltimore, received the territory from Charles I, under a charter which allowed many liberties, including freedom from taxation by the King. In 1649 the colonists established these privileges by the "Toleration Act," which forbade discrimination on account of religious opinions. The Puritans from Virginia sought refuge in Maryland, and in 1652 even captured the State government for a period.

About this time the Duke of York (afterward James II), through ignorance of the country, granted William Penn some of the land which had already been given to Lord Baltimore. This mistake led to a long border

dispute which only ended with the location of the Mason and Dixon Line (1763-1768). In 1694 the capital of the State was moved from St. Mary's City to Annapolis.

During the Revolutionary War no important military operations took place in Maryland, although the "Maryland Line" fought with valor in many engagements, especially those of Long Island, Camden, Cowpens, Guilford and Eutaw Springs. On December 22, 1783, Washington resigned his commission as commander-in-chief of the army in the Senate chamber at Annapolis, where the Continental Congress was then in session.

During the War of 1812 several Maryland towns were pillaged by the British, but Baltimore was saved from plunder by the repulse of the enemy at North Point and Fort McHenry. It was during the bombardment of the latter place that Francis Scott Key wrote "The Star-spangled Banner."

Among the battles of the Civil War three were fought on Maryland soil, South Mountain (September 14, 1862), Sharpsburg, or Antietam, (September 16-17, 1862), and Monocacy (1864). There were also small conflicts at many points, especially along the Potomac.



CALVERT CLIFFS.

In the history of the State are many incidents which have since become of national or international importance. The first wheat was shipped to Europe from Baltimore in 1771; the first regular steam packet that crossed the Atlantic direct from the United States sailed from Baltimore in May, 1838; while the Morse telegraph line transmitted its first message ("What hath God wrought") from Baltimore to Washington, April 9, 1844. Baltimore was the first city in America to have a water company (1792), street gaslights, a railroad (1828), and an electric street railroad (1881). The city contains the first American monument to Columbus, the first State monument to George Washington, the oldest American lodge of the Independent Order of Odd Fellows, and the oldest College of Dental Surgery.

The earliest settlers in Maryland were Englishmen, whose descendants are now scattered all over the State, and comprise the leading element in the population. Many of the early settlers in the country adjacent to Pennsylvania were of German extraction, and their descendants are to-day numerous and influential. Next in importance are the negroes who comprise one-fifth of the population, and who are relatively more prominent in

Charles, Calvert and St. Mary's counties, where they compose fully one-half of the population: and least important in the western counties along the Mason and Dixon Line, where there is only one negro on the average to fourteen whites. In Baltimore, Cecil and Harford counties, the negroes comprise one-sixth of the population, while in the counties of the eastern and western shore, not previously enumerated, they form about two-fifths of the entire population. During the last twenty years there has been a great increase in the Polish, Hungarian and Bohemian inhabitants, who have settled in the mining districts of Allegany and Garrett counties and in Baltimore City.

Maryland has always been a religious center. As early as 1629 services were regularly conducted on Kent Island by an ordained minister of the Church of England. The first Presbyterian Church in America was established at Snow Hill about 1700, and in 1766 Robert Strawbridge established the first Methodist congregation in America in Frederick county. Many of



STATE HOUSE, ANNAPOLIS.

the most prominent of the early settlers were Roman Catholics, and the See of Baltimore has held the first position in America since the decree of 1858.

There are 59 denominations or sects represented in Maryland, and although many of them are scattered throughout the State they show local variations in strength, which are closely related to the history, beliefs and nationalities of the early settlers.

STATE GOVERNMENT.

The present government of the State of Maryland is based on a Constitution formulated and ratified in 1867. Earlier constitutions were adopted in 1776, 1851, 1864, and the Constitution of 1776 was very much changed in 1837. According to the present Constitution the State is divided into 23 counties and Baltimore City, which in turn are subdivided into districts for

school and election purposes. There are no units such as townships, but the local affairs of the cities, towns and villages are carried on by officers in accordance with charters and special acts.

Among the State officials under the Constitution of 1867 are the Governor, elected for four years, and the Secretary of State, who is appointed by the Governor. The Senate and House of Delegates, which together form the General Assembly or Legislature, consist of 26 Senators elected for four years, one from each of the 23 counties and the three districts of Baltimore City, and 91 delegates, elected for two years, apportioned according to the population. Each of the legislative districts of Baltimore is entitled to six delegates, the number allowed the largest county. The Assembly meets every other year, on the first Wednesday in January, and may remain in session 90 days. At the call of the Governor a special session may be held, which is limited by law to 30 days.

The judicial powers of the State are vested in a Court of Appeals (composed of eight judges); Circuit Courts with eight chief judges (who are the judges of the Court of Appeals), and eighteen associate judges; and Orphans' Courts with seventy-two judges. The Appeal and Circuit court judges are elected for fifteen years, the judges of the Orphans' Court for four, the registrars of wills for six, and the sheriffs for two. The Attorney-General of the State and the State's Attorneys are elected for four years. Justices of the peace, constables, coroners and notaries, are appointed by the Governor.

Among the other prominent State officials are the Comptroller, who is the financier for the State, and who is elected by the people for two years; and the Treasurer, who is the banker, and who is elected by the General Assembly for a two year term.

The more important State organizations are the Board of Public Works, Militia, Fishery Force, Land Office, State Agricultural Experiment Station, Geological and Economic Survey, State Weather Service, State Horticultural Bureau, Bureau of Industrial Statistics, Board of Education, Board of Health, Boards of Medical Examiners, Examiners of Dental Surgery, State Lunacy Commission, Live Stock Sanitary Board, and the Fish Commission.

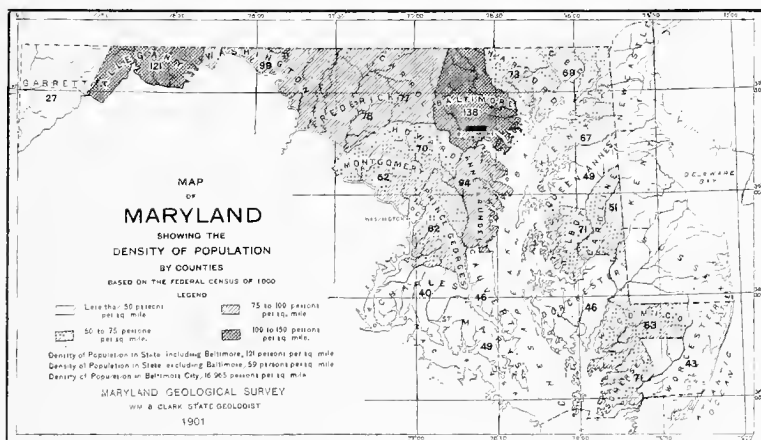
EDUCATION.

The educational history of the State dates back to 1696, when Governor Francis Nicholson established the first public school at Annapolis, now St. John's College. The State schools were brought under the general supervision of the State Board of Education in 1864, and are now supported by State and local taxation. A State Superintendent of Schools was provided for by the General Assembly of 1900. The State schools also include a Normal School for teachers, schools for the deaf and dumb, and for the blind. Baltimore is the educational center of the State. In this city are located the Johns Hopkins University and Medical School, Maryland University, Peabody Institute, The Woman's College of Baltimore, Maryland Institute, St. Mary's Seminary, College of Physicians and Surgeons, Baltimore Medical College, Maryland College of Pharmacy, Baltimore College of Dental Surgery, and many others.

Within the limits of the State are also the Maryland Agricultural College at College Park, St. John's College at Annapolis, Washington College at Chestertown, Mt. St. Mary's College at Emmitsburg, Western Maryland College at Westminster, and many smaller institutions.

THE COUNTIES AND CITIES OF MARYLAND.

Maryland is divided into 23 counties, of which Garrett, Allegany and Washington form the Appalachian Region known as Western Maryland; Frederick, Carroll, Baltimore, Harford, Cecil, Howard and Montgomery the Piedmont Plateau, which is also referred to under the name of Northern-Central Maryland; Anne Arundel, Prince George's, Calvert, Charles and St. Mary's, commonly called Southern Maryland, and Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Somerset and Worcester, known as Eastern Maryland, the two latter districts comprising the Coastal Plain. Of these 23 counties there are but seven that do not border on navigable waters.



POPULATION OF MARYLAND ACCORDING TO THE UNITED STATES CENSUS.

Counties,	1900.	1890.	1880.	Area, sq. miles.	County Town.
Allegany.....	53,694	41,571	38,012	442	Cumberland.
Anne Arundel.....	40,018	34,094	28,226	425	Annapolis.
Baltimore.....	90,755	72,909	83,336	656	Towson.
Baltimore City.....	508,957	434,439	382,313	30	.....
Calvert.....	10,323	9,860	10,538	222	Prince Frederick.
Caroline.....	16,248	13,903	13,766	320	Denton.
Carroll.....	33,860	32,376	30,992	437	Westminster.
Cecil.....	24,662	25,851	27,108	360	Elkton.
Charles.....	18,316	15,191	18,548	451	La Plata.
Dorchester.....	27,962	24,843	23,110	608	Cambridge.
Frederick.....	51,920	49,512	50,482	602	Frederick.
Garrett.....	17,701	14,213	12,175	660	Oakland.
Harford.....	28,260	28,993	28,042	388	Belair.
Howard.....	16,715	16,269	16,140	240	Ellicott City.
Kent.....	18,786	17,471	17,605	281	Chestertown.
Montgomery.....	30,451	27,185	24,759	490	Rockville.
Prince George's.....	29,898	26,080	26,451	482	Upper Marlboro.
Queen Anne's.....	18,364	18,461	19,257	376	Centreville.
St. Mary's.....	18,136	15,819	16,934	372	Leonardtown.
Somerset.....	25,923	24,155	21,668	362	Princess Anne.
Talbot.....	20,342	19,736	19,065	286	Easton.
Washington.....	45,133	39,782	38,561	458	Hagerstown.
Wicomico.....	22,852	19,930	18,016	365	Salisbury.
Worcester.....	20,865	19,747	19,539	487	Snow Hill.
The State.....	1,190,050	1,042,390	934,943	9,860	Annapolis.

The above figures, which are now being revised, show an increase in the population of the State since 1890 of 147,660, or 14.1 per cent. The increase from 1880 to 1890 was 107,447, or 11.4 per cent.



BALTIMORE HARBOR.

URBAN POPULATION OF MARYLAND.

Population of Ninety-eight Incorporated Cities, Towns and Villages of Maryland according to the United States Census.

Towns, etc.	1900.	1890	Towns, etc.	1900.	1890.
Aberdeen	600	448	Hillsboro	196	174
Annapolis	8,402	7,604	Hurlock	380	.....
Baltimore	508,957	434,439	Hyattstown	81	.....
Barnesville	125	.....	Hyattsville	1,222	1,509
Belair	961	1,416	Keedysville	426	430
Berlin	1,356	974	Kensington	477	.....
Bishopville	243	275	Laurel	2,079	1,984
Bladensburg	463	503	Laytonsville	148	.....
Bloomington	395	295	Leonardtwn	454	521
Boonsboro	700	766	Loch Lynn Heights	215	.....
Bowie	443	.....	Lonaconing	2,181	.....
Bridgetown	50	.....	Manchester	609	273
Brookeville	158	.....	Middletown	665	667
Brunswick	2,471	.....	Millington	406	485
Burkittsville	229	273	Mountain Lake Park	260	.....
Cambridge	5,747	4,192	Mount Airy	332	.....
Cecilton	447	485	New Windsor	430	414
Centreville	1,331	1,309	Northeast	969	1,349
Charlestown	244	228	Oakland	1,170	1,046
Chesapeake	1,172	1,155	Ocean City	365	85
Chestertown	3,008	2,632	Oxford	1,243	1,135
Church Hill	368	596	Perryville	770	344
Clear Spring	474	.....	Piscataway	95	.....
Crisfield	3,165	1,565	Pocomoke	2,124	1,866
Crumpton	307	317	Poolsville	236	.....
Cumberland	17,128	12,729	Port Deposit	1,575	1,908
Damascus	148	.....	Preston	192	.....
Darlington	260	339	Princess Anne	854	365
Deer Park	293	179	Queenstown	374	.....
Delmar	659	.....	Ridgely	713	215
Denton	900	641	Rising Sun	382	384
East New Market	1,267	.....	Rockville	1,110	1,568
Easton	3,074	2,930	St. Michael's	1,043	1,329
Elkton	2,542	2,318	Salisbury	4,277	2,905
Ellicott City	1,351	1,488	Sharpsburg	1,030	1,163
Emmitsburg	849	844	Sharptown	529	427
Federalburg	539	543	Smithburg	462	487
Frederick	9,296	8,193	Snow Hill	1,596	1,483
Frostburg	5,274	3,804	Sudlersville	221	125
Funktown	559	.....	Takoma	756	164
Gaithersburg	547	.....	Tanycotwn	665	566
Garrett Park	175	.....	Thurmont	868	.....
Girdletree	336	.....	Trappe	279	251
Grantsville	175	.....	Union Bridge	663	743
Greensboro	641	902	Upper Marlboro	449	439
Hagerstown	13,591	10,118	Walkersville	359	255
Hampstead	480	521	Westernport	1,998	1,526
Hancock	824	815	Westminster	3,199	2,903
Haye de Grace	3,423	3,244	Williamsport	1,472	1,277

The State of Maryland has only three cities of more than 10,000 inhabitants, Baltimore being the only great city with a population of 508,957. There are only 14 cities and towns which exceed 2500 in population, which shows that the occupation of the people of the counties is chiefly confined to agriculture, although the fishing and oyster industries of the Chesapeake Bay Region and the mining and quarrying operations of the western and central counties likewise support a large scattered population.

Those towns and cities with a population of more than 2500 are :

Baltimore, with a population of 508,957, is the most important city of the State. It is situated at the head of navigation, on the Patapsco River, about 13 miles from the Chesapeake Bay, and 170 miles from the Atlantic Ocean at Cape Henry. Baltimore offers many advantages as a commercial center in its natural location, in its peculiar economic conditions, and in the liberal policy of its municipal administration. Its geographic situation is most advantageous for land and water transportation, direct lines of communication by rail connecting it with the great agricultural and mining regions of the south and west, while numerous lines of steamboats have developed a most important coastwise and foreign trade.



MT. VERNON PLACE, BALTIMORE.

Baltimore, named after the then proprietor of Maryland, Lord Baltimore, was laid out in 1730 on a tract of 60 acres, which cost only \$600. Its rapid growth in population and commercial importance has been due to the many favorable conditions before cited. The principal industries are ready-made clothing, oyster canning and fruit packing, shirts and overalls, fertilizers, straw goods, cotton duck, iron and copper, tobacco, drugs and medicines, clay products, ship-building, marble and stone work, lumber and furniture making.

Baltimore is renowned for its beautiful parks, places and public buildings, and on account of the many monuments in its squares has been termed "The Monumental City." Druid Hill Park and Mount Vernon Place are famed for their beauty. Washington Monument, erected in the center of the latter, was the first of the public monuments to be erected to the Father of his Country. Baltimore is also the seat of the famous Johns Hopkins University and many other smaller educational institutions.

Cumberland, named after old Fort Cumberland of colonial days, is the second city in importance, with a population of 17,128. It is situated in Allegany county, on the upper waters of the Potomac River and on the direct line of communication with the west. The situation of this city is exceptionally favorable for manufacturing pur-

poses on account of its location in the midst of rich resources in steam coals and lumber. In the immediate neighborhood are materials suitable for the manufacture of glass, hydraulic cement and high grade building and fire bricks.

Hagerstown, named for Jonathan Hager, its founder, is the third city in size, with a population of 13,591. It is located in the center of the fertile Cumberland Valley and is one of the most enterprising towns of the State. It is the distributing point for a rich farming country and is also a prominent industrial center. The most noted of its manufactures are bicycles, silk, knit goods, shirts, brick, furniture and carriage stock. Several railroads center at Hagerstown so that excellent transportation facilities are provided.

Frederick, named for the last proprietor, Frederick, Sixth Lord Baltimore, is the fourth city in size, with a population 9,296. It is like Hagerstown, the center of an important agricultural region and likewise contains numerous industries. It is an attractive city with many quaint architectural features that delight the stranger.

Frederick is reached by both the Pennsylvania and Baltimore & Ohio railroads.

Annapolis, the capitol of the State, is the fifth city in size, with a population of 8,402. It is the oldest city in the State and was settled in 1649 under the name of Providence, afterward changed to Anne Arundel town. In 1708 it received its name of Annapolis under a charter granted by the English queen. It is the seat of the U. S. Naval Academy, established in 1845, and of St. John's College, which was chartered in



JOHNS HOPKINS HOSPITAL, BALTIMORE.

1784. The State House is one of the most interesting buildings of the colonial period. Many private houses of the same period are still standing, and are among the most beautiful structures of their kind in existence. The chief industry is oyster packing, the annual shipment aggregating upwards of 250,000 gallons. The city is provided with both rail and steamboat communication.

Cambridge, the sixth city in the State, with a population of 5,747, is the largest town on the Eastern Shore. It is in the midst of a fertile farming country and is an important shipping point for vegetables and fruits. It has a fine harbor and its shipping facilities, both by land and water, are excellent. The chief industries are oyster packing and canning.

Frostburg, the seventh city of the State, with a population of 5,274, is situated in western Allegany county at an elevation of 2000 feet above tide. It is in the center of the coal-mining district of the George's Creek Valley and its interests largely center in that industry.

Salisbury, the eighth city in population, with 4,277 inhabitants, is one of the most progressive towns of the Eastern Shore. It is an important business center and contains a variety of industries, the most important business interests centering in the lumber industry. It has both rail and water communication.

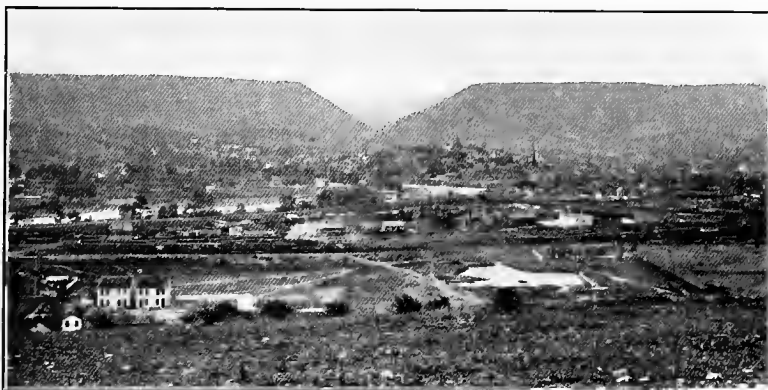
Havre de Grace, at the mouth of the Susquehanna, is an important town of 3,423 inhabitants. Its name is said to be due to a remark of General Lafayette, when on a visit to the region, that the location resembled that of the famous French port. Havre de Grace is situated on the line both of the Baltimore & Ohio and Pennsylvania railroad systems and offers many advantages to manufacturing enterprises. It already has a number of industrial establishments. Its fishing interests are very important.

Westminster, with a population of 3,199, is the center of an important agricultural region. It is situated on high land near the headwaters of the Patapsco River, in a country of more than usual beauty. It contains the Western Maryland College.

Crisfield is situated on the lower Eastern Shore, and has a population of 3,165. Crisfield has had a very rapid growth on account of its important oyster, crab and fish interests. These products are shipped from Crisfield in large quantities. It is provided with both railway and steamboat communication.

Easton has a population of 3,074. It has a number of industrial establishments, including flour mills, fertilizer works, carriage factories, etc. Easton is one of the most important towns of the Eastern Shore, and when the State was partially divided in its political functions was regarded as the capitol of the Eastern Shore. It is also the residence of the bishop of the Protestant Episcopal Diocese of Easton.

Chestertown is one of the oldest towns of the Eastern Shore, its settlement dating from 1706. It has a population of 3,008. Among its important manufacturing interests



CUMBERLAND AND THE NARROWS.

are a large straw-board mill, a carriage factory and a canning factory. It is provided with both rail and water communication. Washington College is situated within its limits.

Elkton, with a population of 2,542, is one of the most important towns of the northern Eastern Shore. It is situated on the Pennsylvania Railroad about half way between Baltimore and Philadelphia. It derives a large trade from the fertile agricultural region that surrounds it. It has a variety of manufacturing industries.

There are many other flourishing towns of less population in the State, some of which are rapidly developing, and are destined in the course of a few years to become important commercial centers. Their names and population may be found in the table on page 10.

NATURAL RESOURCES.

The leading natural resources of Maryland may be grouped under three heads, first the **mineral resources**, including the coal, building-stone, clay, etc.; second, the **agricultural soils**, embracing the many types of soil adapted to a great variety of crops; and third, the **water products**, taken

from the sea, bays and rivers of the State, and affording a basis for the fishing and oyster industries. To these should also be added the forestry and water-power resources, which, although important, are less fully developed at the present time.

MINERAL RESOURCES.

The mineral resources of Maryland are of much value and have yielded a great variety of products, some of which afford the basis for important commercial enterprises. The old crystalline rocks, confined for the most part to the Piedmont region between the Monocacy and the Chesapeake, have afforded the most varied mineral products. Here occur the most important building-stones; the slates of Delta and Ijamsville; the granite of Port Deposit, Woodstock, Ellicott City and Guilford; the gneiss of Baltimore; the marble of Cockeysville and Texas; the crystalline limestone of Westminster; the sandstone of Deer Creek; and the serpentine of Broad Creek and Bare Hills. In these oldest rocks occur also the ores of gold, copper, chrome, lead and zinc. Iron ore is also found here while all the flint, feldspar, kaolin and mica in the State must be sought for in these rocks.



TRANSPORTATION BY RAIL.

These older rocks also appear in the Blue Ridge district where they form the Middletown Valley and have yielded traces of copper, antimony and iron.

The rocks of later age, forming what geologists call the Paleozoic system, make up the western section of the State. They furnish much sandstone and limestone suitable for building purposes, the latter also being burned extensively for agricultural purposes. There are also important deposits of cement rock that have afforded the basis for an extensive industry. At the top of this Paleozoic system of rock formations are situated the coal beds of the famous Cumberland-George's Creek coal basin, including the wonderful Big Vein that is universally thought to furnish the highest quality of steam and smithing coal. These same rocks also contain important deposits of fire-clay and iron ore, the former affording the basis for a very important fire brick industry.

The post-Paleozoic formations of the State, although not as rich in mineral products, are not devoid of deposits of economic value. The interesting variegated limestone breccia, known as Potomac marble, and the brown sandstone of Frederick and Montgomery counties belong to the oldest of

these post-Paleozoic strata. The series of still unconsolidated beds, representing much of the remainder of post-Paleozoic time and comprising all of Eastern and Southern Maryland, and known as the Coastal Plain, furnishes the chief supply of brick, potter's and tile clay; of sand, marl, and diatomaceous earth (silica); and much of the iron ore. The clay industry, particularly, is one of the most important in the State.

These various economic products will be briefly considered in the following pages.

Coals. The coal deposits of Maryland are confined to western Allegany and Garrett counties and are a part of the great Appalachian coal field which extends from Pennsylvania southward into West Virginia. The Maryland coal is mainly semi-bituminous or steam coal, and in the George's Creek basin, near Cumberland, contains the famous "Big Vein" or Fourteen-foot vein, that for steam-producing and smithing purposes has no superior and few equals in any portion of the world. Below the "Big Vein" are a number of



TRANSPORTING COAL ON C. & O. CANAL.

smaller workable seams that contain coal of fine quality, which is already securing an extensive market. The Maryland coal was discovered early in the century and has been continuously worked since 1836, when the first company was organized. The aggregate output of Maryland steam and smithing coal at the present day amounts to several million tons annually.

The Maryland Big Vein coal occurs in the upper coal measures, while the most important of the small veins are in the lower coal measures. The latter have received less consideration in the past on account of the reputation of the Big Vein, but are destined to play a very important part in future coal development in Western Maryland.

The Maryland coal is high in fixed carbon, and, especially in the case of the Big Vein, low in sulphur and ash, thus possessing in highest measure those qualities which give to coal its steam-producing power.

Clays. The clays of Maryland are widely extended, occurring in a great number of the geological formations. They are most extensively developed through a belt running from northeast to southwest along the western margin of the Coastal Plain, and including both the Baltimore and Washington regions. Other important clays are found in the central and western sections of the State, and even the southern and eastern counties are not without this material in large quantities. The Maryland clays are suitable for all grades of building-brick, tile, terra cotta, fire-brick and some grades of pottery. Brick-making began in Maryland in colonial days and has since been one of the most important industries in the State—the great brick works of Baltimore being among the largest of their kind. The manufacture of fire-brick has been one of the most characteristic industries of Maryland for 50 years, and the brick made from the Carboniferous clays of Allegany and Garrett counties are regarded as the best in the country.

Porcelain Materials. The State of Maryland is well provided with porcelain materials, including flint, feldspar and kaolin. The flint is widely distributed throughout the eastern portion of the Piedmont Plateau, and is especially abundant in Cecil, Harford, Baltimore, Carroll and Montgomery counties. It occurs as vein fillings in the form of pure granulated or vitreous quartz. In Harford county, where the veins are most abundant, the quartz has been quarried in large amounts. It is crushed, and then shipped in sacks to the potters.

Kaolin is produced mainly in Cecil county, which is part of the most important kaolin region in the United States, other deposits being found in the adjoining portions of Delaware and Pennsylvania. The kaolin has been worked extensively at several points, notably at North East, Cecil county, where large shipments of this material have been annually made. Considerable flint is extracted in the washing of the kaolin.

Sands. Sand deposits of economic value have been exploited both in the western and southern sections of the State, and the sandy sediment from the bed of the Potomac River and from other streams has also been dredged in large amounts. The Paleozoic formations of Western Maryland contain at two horizons important glass-sand deposits, that have been mined extensively in nearby regions. The most extensively developed sand deposits in the State, however, are found in Anne Arundel county, where large excavations have been made in the Cretaceous deposits near the head of the Severn River, and a good grade of glass-sand obtained. The location of these sand deposits at tide renders it possible to ship the materials cheaply by water, and it is probable that they will be much more fully utilized in the future than they have been in the past.

Molding-sand, suitable for brass castings, is found in the vicinity of Catonsville, Baltimore county, and this deposit is worked to some extent at the present time. A sand is secured from the south shore of the Patapsco River below Baltimore for pig-iron casting.

Many sands are used for building purposes, the Cretaceous sands of Anne Arundel and Baltimore counties finding large employment in this way. Some of the residual sands of the Piedmont Plateau region are similarly used, especially that derived from the quartz-schist.

Marls. The Tertiary formations of Eastern and Southern Maryland contain important marl deposits that have never been developed except

for local uses. Their agricultural importance has not been generally recognized, although they have been worked to some extent since the early decades of the century. The older Tertiary marls are glauconitic, and are not unlike the famous greensand marls of New Jersey, which have been so largely and successfully employed there as a natural fertilizer. Greensand marl contains a small percentage of phosphoric acid, some potash and a greater or less amount of carbonate of lime. When spread upon the surface of the land the effect is slow, but is often more lasting than the commercial fertilizers. The younger Tertiary marls are mainly shell deposits, and are commonly known under the name of shell-marls. They frequently contain a large percentage of lime, and thus afford a valuable addition to certain soils.

Diatomaceous Earth. Diatomaceous earth, known to the trade as silica or tripoli, has been produced in larger quantities in Maryland than anywhere else in the United States. It is confined to the middle Tertiary and consists of deposits of almost pure silica 30 to 40 feet in thickness.



CARBONATE IRON ORE DEPOSITS.

It is chiefly found in Calvert and Charles counties, where it has been more or less extensively worked at the mouth of Lyon's Creek on the Patuxent, and at Pope's Creek on the Potomac River. This remarkable deposit is composed of the microscopic shells of diatoms, and has found various uses in the trades.

Iron Ores. The iron industry in Maryland was developed early in colonial days, and continued until a recent period to be one of the most important factors in the prosperity of the State. Numerous references to the iron ores and their manufacture into iron occur in the records of colonial times. The Principio Company, one of the largest of early commercial enterprises, controlled many furnaces and forges in Maryland and in Virginia, and both during the Revolutionary War and the War of 1812 furnished guns and projectiles to the army. These furnaces, as well as those in the western

counties of the State, have long since been abandoned, with the exception of the Catoctin furnace in Frederick county, which has been from time to time in recent years in active operation. The only ores now being produced in Maryland to any extent are the carbonate ores derived from the clays along the western margin of the Coastal Plain, chiefly in Anne Arundel and Prince George's counties. The great bulk of these ores is to-day smelted in the Muirkirk furnace in Prince George's county. It is interesting to note that this carbonate ore was probably the first iron ore worked in Maryland, and is, even to-day, highly prized for its tensile strength.

Mineral Paints. Mineral paint has been produced at several points in Maryland. Large quantities were obtained in former years from the brown iron ore deposits of Frederick county. Ochre mines have also been operated in Carroll and Howard counties. The deposits of chief importance at the



GRANITE QUARRY.

present time, however, are found associated with the clays in Anne Arundel and Prince George's counties. In the latter locality the material is a fine and highly ferruginous clay that can be easily worked, and large quantities have been annually mined. It occurs in many grades and colors.

Building and Decorative Stones. The building and decorative stones of Maryland are widely distributed throughout the western and central portions of the State, and consist of many different varieties which, from their diversity in color, hardness and structural peculiarities, are well adapted for nearly all architectural and decorative purposes. Among the most important may be mentioned the granite, gneiss, marble, limestone, slate, sandstone and serpentine. Among the localities in Maryland where **granite** has

been most extensively worked are Port Deposit, in Cecil county; Woodstock, in Baltimore county; and Ellicott City and Guilford, in Howard county. Other areas in Cecil, Howard and Montgomery counties contain some good stone, but it is quarried only for local use. At the localities first mentioned the granite is extensively quarried at the present time, and has afforded material for the construction of some of the most important buildings in the country, including the Capitol and Congressional Library in Washington, Fortress Monroe, Forts Carroll and McHenry, the U. S. Naval Academy, and other public and private buildings, as well as bridges in Baltimore, Washington and Philadelphia. The excellent quality of the stone renders it available in many cases as a decorative stone, and monumental work has already been undertaken.

The more solid varieties of the **gneiss** occurring in and near the city of Baltimore are extensively quarried for use as foundation stone. This rock is of a gray color, and occurs in parallel layers of light and dark stone, which



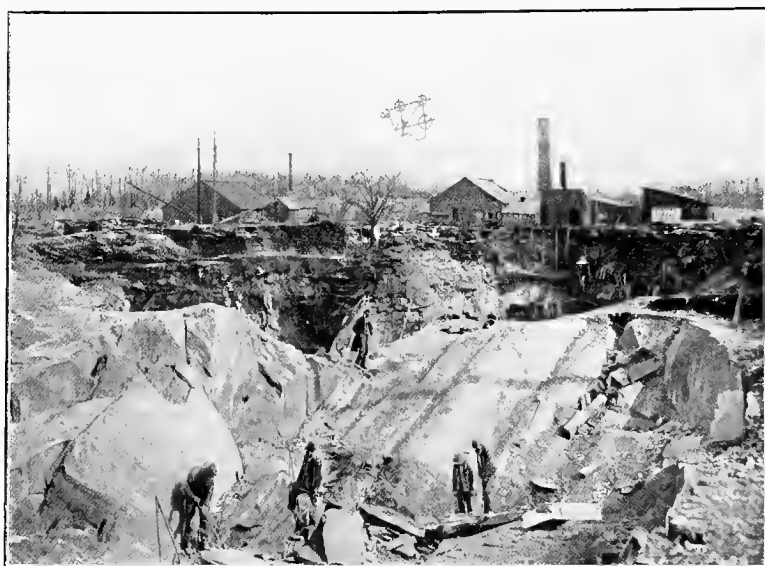
MARBLE QUARRY.

at times are more or less sharply contrasted. Buildings constructed of gneiss, of which there are many in Baltimore, present an agreeable effect. Among the more important structures may be mentioned The Woman's College of Baltimore.

The **marble** of Maryland is mainly confined to the eastern division of the Piedmont Plateau. The white varieties occur for the most part in Baltimore county, and the highly variegated marbles in Carroll and Frederick counties. The white marbles of Baltimore county are found in a series of narrow belts a few miles to the north of Baltimore City. The most important of the areas is that which extends northward from Lake Roland to Cockeysville, and which is traversed by the Northern Central Railway. The marble has been extensively quarried both at Cockeysville and Texas, the well-known Beaver Dam Marble Quarries of the former locality having been in successful operation for more than 75 years. The rock is a fine saccharoidal dolomite of

great compactness and durability. Monoliths of large size can be obtained at the quarries. Many important structures in Baltimore, Washington and Philadelphia have been made of this marble. Stone for the construction of the Washington Monument in Baltimore was taken from this locality as early as 1814.

The fine-grained, compact and variegated marbles, or crystalline limestones, of the western portion of the Piedmont Plateau in Carroll and Frederick counties compare favorably in their quality, texture and beautiful veining with the well-known marbles from Vermont and Tennessee, and are deserving of much more attention than they have heretofore received. In the Wakefield Valley, west of Westminster, a beautifully mottled red and white marble occurs; others of black and white, gray and white, and blue and white veining occur near New Windsor and Union Bridge, and still others of a variegated yellow, with lighter veinings, have been derived from



SLATE QUARRY

the same area. This marble, on account of the limited extent of the deposits, has not been regarded as of much economic importance, but the stone, when secured, is well adapted for purposes of interior decoration.

Another stone which may be classed with the decorative marbles is the Triassic conglomerate, or breccia, of southern Frederick county. It is known as "Potomac Marble," or "Calico Rock," and has received noteworthy application as a decorative stone in the old Hall of Representatives at Washington, where it forms a series of beautiful columns. It occurs, well exposed, at Washington Junction, Frederick county, and extends northward along the base of the Catoctin Mountain. The limestone fragments of which the rock is composed are imbedded in a red ferruginous cement, and the stone, when polished, presents a very beautiful appearance.

The blue **limestones** of the Appalachian district have been used to some extent for building purposes, more especially in Hagerstown, where several structures have been made of this material. The blue limestone changes its color rapidly on weathering, and with a rather pleasing effect. A very compact, even-grained and pure cream white stone occurs at one or two points in the Hagerstown Valley, but has not been exploited to any great extent as yet. The limestones are extensively used for foundation and other purposes.

The **slate** of northern Harford county is a part of the Peach Bottom Slate Belt that extends northward into Pennsylvania and southwestward into Baltimore and Carroll counties. The best slate in this belt is found not far from the Pennsylvania line in Harford county, the shipments, however, being largely made from Delta, Pa., and on this account the slate is often credited to Pennsylvania. The Peach Bottom slate has always enjoyed a very high reputation, and is second to none in its durable qualities. It has been worked since Revolutionary times.

The **sandstones** of different color which have been found at many localities in Central and Western Maryland are, many of them, well suited to furnish valuable building stones; but only one or two localities have been commercially developed to any extent, although the stone is used locally at many points. The red sandstone of Triassic age in Frederick and Montgomery counties has long possessed much reputation in the building-stone trade. The most extensive quarries are situated on the Potomac River, near the mouth of Seneca Creek. The Seneca sandstone has been quarried in a more or less systematic way since 1774, and has always been highly regarded for its strength and durability and its deep red color. It has been used in the construction of many important buildings, including the Smithsonian Institution in Washington. The white Cambrian sandstone of the Catocin and Blue Ridge mountains has been extensively utilized locally, and at times has found somewhat wider employment, especially by the railroad companies. In Allegany and Garrett counties the Silurian, Devonian and Carboniferous sandstones have been quarried at several points, particularly in the vicinity of Cumberland, where two of these sandstone beds have furnished materials for steps, curbs and architectural trimmings.

One of the most interesting and beautiful decorative stones in Maryland is the **serpentine**, which has been worked more or less extensively in Harford, Baltimore and Cecil counties. The rock is very hard, and possesses a rich emerald green color, clouded with darker streaks of included magnetite. Maryland serpentine has been used for interior decoration in several large buildings in New York, Philadelphia, Baltimore and Washington, and has great possibilities as a decorative stone.

A number of the other Maryland stones have been used for building and decorative purposes. Among these may be mentioned the black **gabbro**, locally known as "Niggerhead Rock," which occurs widely throughout the eastern portion of the Piedmont Plateau. It is very hard and tough, and cannot be economically quarried and dressed, and on that account has not found very wide use. The various other stones employed for building purposes can be regarded to have little more than local value.

Lime and Cement Products. The limestone and marble deposits of Maryland have been extensively burned for building and agricultural uses.

This industry is not as important as it was at an earlier period; but there are still many kilns used for supplying lime for local purposes scattered throughout the district in which the calcareous rocks appear.

The limestone and marble are also used as a flux for blast furnaces, the main supply being derived from the coarse-grained marble of Texas, Baltimore county, and the limestone of Cavetown, Washington county.

Hydraulic cement has been extensively manufactured from the magnesian limestone of western Washington and Allegany counties, especially at Hancock and Cumberland (and more recently at Pinto) where extensive plants have long been in operation. The products of these industries have a high reputation, and have been extensively employed both within and without the State.

Gold Deposits. The crystalline rocks of the Piedmont Plateau have been found to carry gold in Maryland, Virginia, North Carolina and Georgia. The gold occurs in quartz veins, which occupy the old lines of fracture in the rocks. Gold was first discovered in Maryland in 1849, in Montgomery county. The first mine was opened in 1867, and some wonderfully rich specimens have been obtained, although the gold is so unevenly distributed that it has never been worked with profit. Gold has been reported from other portions of the State, but these so-called finds are, when thoroughly sifted, found to be either entirely without foundation or the amount of gold so slight as to have no commercial value. The Montgomery county mines in 1890 produced between \$15,000 and \$20,000 worth of gold; but within the last few years the mines have been practically abandoned. A few hundred dollars worth of gold only is annually obtained.

Road Materials. Maryland is well provided with road-building materials of good quality. The trap rocks, which have shown themselves as the result of careful tests to be best adapted for this purpose, occur well scattered throughout the seven central counties of the State, and advantageously located for land and water transportation. The western counties, although without the trap rocks, are all provided with limestone, as well as silicious deposits of value. Most of the counties of Southern Maryland, and the northern counties of the Eastern Shore, have iron-bearing gravels that can be employed with advantage for road-building purposes. The central and southern Eastern Shore counties have, in the absence of proper rock, a large supply of oyster shells, so that no section of the State is without road-building material of some kind.



A MARYLAND HIGHWAY.

Mineral Waters. The mineral waters of Maryland have attracted considerable attention, and several kinds are being placed on the market at the present time with greater or less success. A few are represented as having medicinal properties, but the majority are sold principally as table waters, mostly in the city of Baltimore. Nearly all of the well-known waters come from the crystalline rocks of the Piedmont Plateau, a few only being reported from the Appalachian region and the Coastal Plain. Summer resorts have sprung up, as in the case of Chattolane and Buena Vista, about the more important of these springs.

Miscellaneous Deposits. There are several other mineral substances in Maryland, which are either not being worked at all or only to a very limited extent at the present time, that have had a very interesting history. Among them may be mentioned copper, chrome and soapstone.

Copper was worked in Maryland at a very early period in colonial times, and until the discovery of the great copper fields of the Lake Superior region, was an important mineral product of the State. The abandoned mines in Baltimore, Carroll and Frederick counties to-day indicate the importance of the industry at this earlier period.

Chrome Ore was discovered in 1827 in the serpentine of the Bare Hills, in Baltimore county, and subsequently other deposits were found in Harford and Cecil counties. For many years Maryland supplied most of the chrome ore of the world, but the discovery in 1848 of the great deposits of chromite in Asia Minor caused the practical abandonment of the chrome mines of Maryland, although Baltimore is still one of the most important centers for the manufacture of chromium salts.

Soapstone has been worked to some extent in Carroll, Harford and Montgomery counties, the most important occurrence being in Carroll county, where there is a small production of this material at the present time.

Among other mineral substances known to occur in Maryland, although not commercially profitable at the present time, may be mentioned lead, zinc, manganese, antimony, molybdenum, graphite, mica and asbestos.

The following table contains the values of the average output of Maryland mineral productions during recent years :

Coal	\$3,750,000	
Brick and Tile.....	1,100,000	
Pottery.....	500,000	
Kaolin.....	10,000	
Flint.....	27,500	
Sands.....	50,000	
Marls.....	5,000	
Silica, or Tripoli.....	5,000	
Iron ore (carbonate).....	20,000	
Mineral paints.....	80,000	
Building Stone—		
Granite and Gneiss.....	\$500,000	
Limestone.....	80,000	
Slate.....	100,000	
Marble and Serpentine.....	80,000	
Sandstone.....	30,000	
Gabbro.....	5,000	
Miscellaneous.....	5,000	
Cement—		800,000
Rock cement.....	\$180,000	
Portland cement.....	20,000	
		200,000
Lime (agricultural and building).....		720,000
Gold.....		500
Road materials.....		100,000
Mineral waters.....		35,000
TOTAL.....		\$7,403,000

AGRICULTURAL SOILS.*

Maryland, with its great variety of soil and climatic conditions, offers exceptional advantages to the agriculturalist. Within the borders of the State are lands admirably adapted to general farming, while the fine market and transportation facilities offer every inducement to those who wish to enter the field of specialized farming. Generally it is customary, in speaking of the different portions of the State, to refer to the Eastern Shore, Southern Maryland, Northern-Central Maryland and Western Maryland. Each of these sub-divisions is a distinct agricultural region and possesses certain peculiarities of soils, surface features and climatic conditions, as well as different market and transportation facilities.

The **Eastern Shore** includes the counties that lie on the eastern side of the Chesapeake Bay. The extremes of climate are tempered by proximity to the ocean and bay, and the lands have proved their special adaptability to early fruits and vegetables, in addition to the staple crops of wheat, corn, oats and hay.



TRUCK FARMING IN SOUTHERN MARYLAND.

In the northern part of the Eastern Shore are fine wheat and corn lands, the wheat lands being rich loams which overlie clay loam subsoils. They are easy to cultivate, and can be made exceedingly productive. Soils of this character occupy large tracts of level upland in southern Cecil, Kent, Queen Anne's and Talbot counties. These soils are of a rather yellowish red color, but there are other wheat lands with soils of a different character. In the lower counties, especially in portions of Dorchester, Caroline, Wicomico and Worcester, are large areas of stiff white clay soils that produce wheat, corn, oats and hay, or any crop adapted to a stiff clayey soil. Frequently these clays need underdrainage to make them produce well, as the subsoil is close and retentive.

* This chapter is based on the results of the soil survey, now being carried on by Maryland Geological Survey in coöperation with the Bureau of Soils of the U. S. Department of Agriculture, and has been largely prepared by Mr. C. W. Dorsey of the latter organization.

There are also large areas of rich sandy loams that are suited to growing vegetables and all kinds of small fruits, and consequently in many sections the canning industry has been enormously developed. The excellent transportation facilities allow perishable fruit to be shipped to all of the larger northern cities where it finds a ready sale. In some sections farming in recent years has undergone a complete revolution, the old staple crops have been given up and the more lucrative truck and fruit crops introduced. The peach crop from the Eastern Shore is very large in good seasons. This industry is rapidly spreading into the lower counties. Pears have recently proved a great success in Kent county.

In connection with the soils of the Eastern Shore some mention must be made of the large areas of tidal marsh lands. Thousands of acres of fertile land could be reclaimed at comparatively little expense, but as yet little or no attempt has been made in this direction. Lands that have been reclaimed are exceedingly fertile and will produce for an almost indefinite period.



UNCLEARED MOUNTAIN PEACH LANDS.

Southern Maryland. Southern Maryland includes the lower counties of the State that lie on the western side of the Chesapeake Bay. The land in general is higher and more broken than on the Eastern Shore.

The soils of Southern Maryland range in texture from gravelly loams to light clays. Generally speaking, they consist of loams and sands which are admirably adapted to growing all kinds of fruit and vegetables. The wheat lands are the heaviest types of soil found in Southern Maryland. They occur on the rolling uplands to a considerable extent, and as wide terraces along the Potomac and Patuxent rivers. These soils are heavy loams and clay loams, generally of a yellowish color. Some of these soils are still in excellent condition in spite of having been cultivated for upwards of 200 years. On the uplands tobacco is grown as well as wheat. Wheat is grown on nearly

all classes of soil in this portion of the State, but with very poor results on the lighter sandy loams. Lighter loams are found in some portions of the uplands and are better adapted to raising tobacco. The yield is less per acre but the quality is good. Maryland tobacco is exported chiefly to Holland, France and Germany. It is a light, mild smoking-tobacco, and formerly brought a much better price than at present. Competition with new tobacco-producing states and changing market demands have lowered the price and have correspondingly decreased the profits. The tobacco lands have been allowed to run down, and those farmers who have turned their attention to other crops are gratified with the results obtained. The sandy loams cover large areas of Southern Maryland. There are loose sandy soils which are too light in texture for producing wheat or grass, but since the extensive truck industry has been developed the lands that are near markets have greatly advanced in value. The sandy river necks south of Baltimore are famous truck-growing areas and produce enormous quantities of melons, pears, beans, strawberries and small fruits. Shipments are made principally by boat when the distance is too far for hauling by wagon. There is also a very large peach industry in this section of the State.

While certain portions of Southern Maryland have made great advancement along the lines of successful agriculture, there are still large areas of productive soil that are lying idle or growing up in pine forests. Lack of transportation facilities has had much to do with bringing about these conditions in certain sections, and the sparsely settled condition of some of the counties has also prevented the development which the fertile nature of the soils would seem to warrant. By introducing crops adapted to the character of the soil, and with adequate transportation facilities this region should be made even more productive than it was formerly.

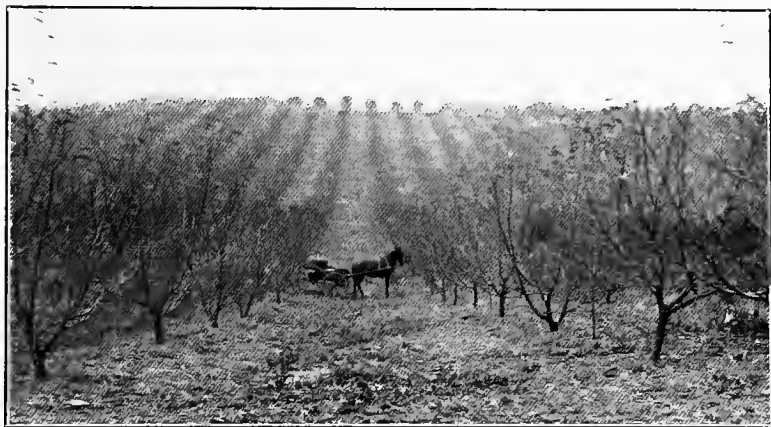
Northern-Central Maryland. The agricultural soils of this section of Maryland are mainly residual, that is, they are the products of the slow decomposition of the underlying rocks. They are with few exceptions strong and fertile. They can be made very productive and are generally in a high state of cultivation. The soils may be discussed under the following classes: The limestone-valley lands, the red lands, the gray lands, the phyllite soils and the barren lands of the serpentine areas.

The limestone-valley lands are perhaps the strongest soils found in the region. They are identical in many respects with the soils of the Hagerstown valley. These soils are heavy red and yellow loams and clays. The largest valleys of these rich soils are found in Frederick, Baltimore, Carroll and Howard counties. These soils by careful cultivation annually yield fine crops of grass, wheat, corn and other cereals. Many of these valleys have long been noted for their prosperous, well-managed farms. On account of their heavy clayey nature they are famous grasslands and large numbers of cattle are fattened in these valleys. The proximity to Baltimore and the excellent transportation facilities have also greatly stimulated the dairy interests.

The red lands may be divided into two sub-classes. First may be described the red lands of Carroll and Frederick counties which consist of red loams and clay loams. These soils occupy areas near the fertile Monocacy limestone-valley, and the differences between the soils of the two regions can be easily compared. In good seasons the red lands are almost as pro-

ductive as the fertile limestone soils, but during years when the conditions for growth are unfavorable the yields are not so high as from the heavy clayey soils of the limestone valleys. However, the red lands rank as good, strong soils, and generally produce excellent crops of grass, wheat and corn, oats and potatoes, the principal crops grown in this section of the State.

The second class of red land soils occupies areas in Cecil, Harford and Baltimore counties. The soils are heavy red loams, grading into stiff clay loams of a reddish or yellowish color. These are likewise strong clay soils, naturally productive and capable of standing considerable hard usage. They produce good yields of the staple crops such as wheat, grass and corn. In addition they produce large yields of tomatoes and corn for canning purposes. The canning of corn, tomatoes and other vegetables has been extensively carried on in Harford and Cecil counties for many years, and is one of the leading industries of these counties. The dairy interests are considerable on these strong soils, which produce excellent crops of hay and afford fine pasturage.



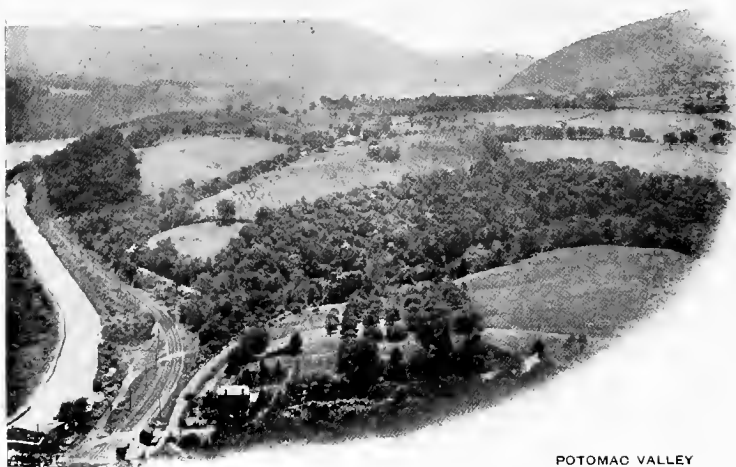
MOUNTAIN PEACH ORCHARD.

The gray lands and the corn and wheat lands, derived from deposits of phyllite, are so nearly alike in many respects that they may be discussed together. These soils occupy large areas in Frederick, Carroll, Montgomery, Howard, Baltimore, Harford and Cecil counties. The surface of the country away from the larger streams is gently rolling but becomes hilly and broken along the principal streams. The surface drainage is good in the entire region. The soils are grayish yellow loams which grade into yellowish clay loams. These are naturally productive, but on account of their rather light texture they must be farmed carefully or they become exhausted. They are excellent corn and wheat soils and are classed as good general farming lands. In Cecil and Harford counties they produce fine crops of late tomatoes for canning purposes. In Montgomery county they were formerly used to a considerable extent for growing tobacco. They are good grazing lands and near Washington and Baltimore the dairy business is extensively carried on. In the neighborhood of these cities, market gardening is also an important

industry. The lighter loams, especially, yield fine crops of all kinds of vegetables, and the nearness to market allows the farmer to haul his produce directly to the consumer. Transportation facilities are also good.

Western Maryland. Western Maryland is divided into three well-marked districts from an agricultural point of view.

The eastern district includes the broad Hagerstown Valley and the Middletown and other smaller valleys, together with the mountain slopes adjoining. The Hagerstown Valley has a width of about 20 miles and contains a large number of excellent farms. The soils are red or yellow clay loams or clays derived from the weathering of the thick beds of limestone that occur there. These soils, by careful cultivation, produce large crops of wheat, corn and grass. Thirty-five bushels of wheat per acre is not an uncommon yield, and from 50 to 100 bushels of corn can be raised. The railroad facilities are good in the valley, and Hagerstown, a prosperous manufacturing city, is situated in the center of the region. In addition to the large production of wheat and corn many cattle are annually fattened.



POTOMAC VALLEY
FARM LANDS.

Along the eastern margin of this valley is the center of the famous mountain peach industry. So excellent are the shipping facilities that peaches picked in the late afternoon are on sale in the New York markets the next morning.

The smaller valleys, of which the Middletown Valley is the most important, contain good soils, mostly heavy loams and clays well adapted to raising corn, wheat and grass, which are the principal crops grown.

The central district is rough and mountainous, and the greater portion is thickly wooded and not well adapted to farming purposes. The soils of the mountain ridges are thin and stony and difficult to cultivate. There are, however, some valleys in this region that possess limestone soils that are

fertile and can be made quite productive. The largest of these valleys lies 12 miles east of Cumberland and the strong clay soils produce good crops of wheat and timothy hay. Other valleys of this region possess shale soils which can be made productive, and there are also large areas of hill pasture land which contain shale soils. Along the Potomac River and some of the larger creeks, especially near Cumberland, there are large tracts of alluvial bottom-lands which annually make good yields of the staple crops. Fruit growing has lately been introduced in the hilly region east of Cumberland, and there are already many large and profitable peach orchards. Oats, buckwheat, wheat, rye and potatoes are the main crops grown in this part of the State.

The western district comprises the Alleghany Plateau. The soils may be classed as the red sandstone and shale soils, the yellow sandstone soils, the rough stony soils of the mountain ridges and the "glades" or mountain swamp lands.

The red sandstone soils occupy large areas in the central portion of Garrett county, and the yield of crops produced on these soils compares favorably with the best class of soils found in the entire State. The soil is a heavy red loam that grades into red clay loams. These soils occupy rolling valley lands and produce good crops of wheat, corn, oats and buckwheat. The Cove country, as it is called in northwest Garrett county, has long been noted as a fine farming section, and there are still large areas of these fine soils which can be made fully as productive and prosperous as the section just mentioned.

The yellow sandstone soils comprise the greater portion of Garrett county and the George's Creek Valley in Alleghany county, and may be classed as heavy sandy loams. They produce good yields of buckwheat, wheat, oats, hay and corn. In the native forest the sugar-maple abounds, and a large income is derived from the sale of maple sugar each spring. These lands are also good pasture lands in addition to being well adapted to apple orchards.

The stony mountain soils include the shallow soils found along the crests and sides of the principal mountain ridges of this region. The soils are thin and stony, difficult to till and not adapted to general farming purposes. They are not extensively cleared, and are covered in many places with valuable tracts of merchantable timber, especially chestnut.

The "glades" are large swampy tracts of land which occur principally in the central portion of the county. Formerly the glades were famous cattle pastures during the dry seasons, but now large tracts of glade lands have been thoroughly drained and the soils, rich in decayed organic matter, produce good crops of oats, timothy, and even corn and wheat.

In conclusion it may be stated that Maryland has a great variety of soils which are adapted to almost any crops that will grow in this section of the United States. The greater portion of the arable land of the State is under cultivation and farmed at a fair profit, but there are extensive areas, especially in Western and Southern Maryland, where there is room for great agricultural development.

The following table shows the annual crop production of Maryland at the present time. The figures have been furnished in part by the U. S. Department of Agriculture from statistics secured in 1899, and in part by the

Maryland Agricultural College from data obtained in the progress of their investigations in the State:

	Acreage. Aeres.	Production. Bushels.	Value. Dollars.	Yield per Acre. Bushels.
Corn	580,076	18,562,432	\$6,682,476	32.0
Wheat.....	759,643	10,710,966	7,283,457	14.1
Oats.....	72,852	1,675,596	502,679	23.0
Rye	25,234	353,376	201,367	14.0
Buckwheat.....	7,510	97,630	54,673	13.0
Potatoes	22,193	1,420,352	724,380	64.0
Hay.....	282,992	319,781 tons.	3,885,339	1.13tons
Tobacco.....	35,000	21,000,000 lbs.	1,470,000	600 lbs.

The total amount realized on the above crops amounts to \$20,804,371. It is to be regretted that figures are not at hand for the fruit and truck crops. The amount of these would swell the total value of farm products to nearly \$30,000,000, if not more.



TONGING FOR OYSTERS.

THE WATER PRODUCTS.

The Chesapeake Bay and its tributaries, occupying less than one-quarter of the entire area of Maryland, supply to the people each year products valued at more than \$10,000,000. Throughout the country this magnificent body of water is renowned for its oysters, crabs, terrapin and shad, yet few even among the inhabitants along its shores realize the great wealth contained in its waters.

The Oyster Industry. The brackish and salt waters of Chesapeake Bay have long been known as the favorite home of this highly appreciated food product, and from them young oysters have been transplanted to replenish the exhausted natural beds of New Jersey, New York, Connecticut and Rhode Island.

At the present time the "natural beds" occupy large areas on either side of the main channel of the Bay and about the mouths of the numerous rivers. A single bed, along the shore of Anne Arundel county, is estimated to cover nearly 30 square miles. Besides this great bed there are at least half a dozen more beds, each half its size; while many others cover areas varying from 200 to 10 or 12 acres. The total area occupied by these natural beds has been estimated to be about 193 square miles. If, however, the advantages afforded by the Bay were utilized by a proper system of oyster-cultivation, there is scarcely a foot of the bottom of the 2,000 square miles covered by its shallow waters where oysters could not be reared. And it may be safely asserted that the annual product might reach the colossal amount of 400,000,000 bushels a year.

The output of to-day, though insignificant when compared with what it might be, reaches the really immense proportions of 5,000,000 bushels a year with a value of \$3,500,000. The oysters obtained, besides supplying the local demands, support the important packing and canning trade of Baltimore, Crisfield, St. Michaels, Oxford, Cambridge and Annapolis, whose products reach almost every inland town in the country.

Baltimore is the greatest oyster market in the world, a fleet of nearly 5,000 boats being engaged in the business. During the season, which extends from September 15 to April 25, 50,000 men are employed on these boats and at the wharves, while many more find work with the shippers.

The Shad Industry. The Fish Commission empty into the Chesapeake Bay and its tributaries each year from 65,000,000 to 75,000,000 young fish to support the shad fisheries of the State, which depend upon the return of the adult shad in the spring of the year. It is estimated that 2,250,000 or more shad are secured from Maryland waters each year. About 750,000 of these are obtained from the Potomac, 330,000 from the Pocomoke and Tangier Sound tributaries, 50,000 from the Patuxent, 350,000 from the Choptank and its tributaries, 50,000 from the Chester, while 650,000 are taken on the shores of the Chesapeake and its smaller tributaries, leaving 70,000 or more to be secured from the Susquehanna.

The principal shad region of the Bay shore lies north of Swan Point, between it and the lower stretches of the Susquehanna. This area yields fully a quarter of the entire season's catch. The principal landing points for the Bay shore fisheries are Havre de Grace, North East, Charlestown, Betterton and Rock Hall. The Choptank, as above indicated, furnishes about one-sixth of the entire catch, while the other rivers, with the exception of the Potomac, are of less importance. The latter stream yields a catch equalling or surpassing that of the head of the Bay.

The season begins about the first of April, and extends to the last of May or the first of June. The largest catches are usually in April.

The figures for the Potomac are somewhat difficult to determine, since by the compact of 1785 the fishery rights in the river exist in common between the citizens of Virginia and Maryland, who land their catch in their respective States. In 1896 fully two-thirds of the Potomac catch was landed on the Virginia shore. The total annual catch within the State is estimated to have a value of about \$200,000.

The Menhaden Industry. This fish is by far the most abundant fish along the Atlantic Coast of the United States, and in many ways one of the

most important, but since it is not usually regarded as edible it is little known outside of the fishery and fertilizing industries. The menhaden is a small fish seldom weighing a pound and closely related to the herring and the shad. It usually makes its appearance in Chesapeake Bay early in the spring and rapidly becomes more and more abundant, crowding into the sounds and inlets until the water is fairly alive with them. They remain as long as the weather is warm, but as the winter approaches they pass out into the ocean, so that few are found in the Chesapeake Bay after November.

They are of great commercial importance from the fact that a valuable oil can be extracted from their bodies by pressure, while the solid residue is an important constituent of manufactured fertilizers. In a single year the catch in Chesapeake Bay has been as high as 92,000,000 pounds, which has yielded 214,000 gallons of oil worth \$85,000; 10,500 tons of guano worth \$210,000; 212,000 tons of compost, worth \$19,000, or an annual product worth more than \$300,000.

Small catches of the menhaden are made at various points along the



EASTERN SHORE INLET

shores of the Chesapeake Bay, especially in the southern part, but the main industry is at present limited to the Potomac River, which yields more of these small fish than any other river along the eastern Atlantic Coast.

Miscellaneous Fish. The U. S. Fish Commission and other Bureaus have endeavored to gather accurate statistics regarding the catch of various edible fish obtained within the Chesapeake Bay, but have been unable as yet to gather wholly satisfactory information regarding the following species, the amounts and values of which as given below being based upon careful estimates made after consultation with leading wholesale dealers in Baltimore, where fully nine-tenths of the total product of the fisheries is handled. It is impossible to give accurate estimates, but the following are believed to represent fairly the average annual yield.

The most highly prized edible fish is the **Bay** or **Spanish Mackerel** which has its chief feeding ground in the Chesapeake Bay, where more than

80 per cent. of the catch of the Atlantic Coast is made. It is estimated that fully 1,200,000 pounds, valued at \$120,000, were captured during the season, May to September, 1900.

The estimated annual catch from the Chesapeake Bay of **Bay Trout** is 11,100,000 pounds valued at \$450,000; of **Blue Fish** is 4,400,000 pounds valued at \$260,000; of **White Perch** 14,000,000 pounds valued at \$440,000; of fresh **Herring** 100,000,000 pounds valued at \$1,000,000; of **Rock** 14,000,000 pounds valued at \$1,400,000; of mixed fish, including **Flounders, Pike, Pickerel**, etc., 10,000,000 pounds valued at \$500,000.

The Crab Industry. During the season, from April to October, the shallower waters of the shores and estuaries of the Chesapeake Bay, as well as the waters on the ocean side, contain an indescribable number of crabs. This abundance causes a fierce competition for food so that the crabs are always hungry and ready to seize any sort of animal bait.

The number of **hard-shell crabs** captured in a day is astonishing, a single fisherman sometimes catching 2000 between sunrise and ten in the morning. It is not possible to gain more than an approximate estimate of the catch of hard-shell crabs each year, but it is safe to assume, however, that at least 750,000 bushels are obtained.

At the principal crab-canning centers of Oxford, Cambridge and Crisfield, about 350,000 bushels of the catch are picked and canned, yielding over 200,000 gallons of crab meat annually. The crabs, during the few hours when their shells are soft, take no food and hide themselves in the sand or grass, so that **soft-shell crabs** are much less abundant and bring a higher price than the hard-shell. Moreover, when the crab is soft it is very delicate and easily killed, and is thus transported alive with difficulty. The irregularities in the daily catch which might arise under these adverse circumstances are avoided by the use of "shedding pens" which hold the "shedders" until they are soft. An experienced fisherman can tell at a glance the yellowish female and browner males that are about to shed their shells. The price of crabs grows rapidly from ten cents a dozen when they are put in the pens to thirty, forty or fifty cents when they are put on the market as soft-shell crabs.

The estimated catch each year is 700,000 dozen, valued at from \$300,000 to \$350,000.

Terrapin. The oyster and the crab suggest the terrapin as a third characteristic product of the shores of the Chesapeake. This expensive little tortoise ranges from New England to Texas, but is most abundant in the marshy lands from the Chesapeake southward. The terrapin is most easily caught in the summer when the demand is slight, so the catch is "farmed" in pens and fed with crabs and fish until the winter, when as a delicacy the terrapin brings from \$2.50 to \$75.00 per dozen. The value of the annual output for the State is estimated at \$50,000.

Clams. During the season from May until September, estuaries and bays of Somerset county afford clams in such abundance that the output from Tangier and Pocomoke Sounds exceeds 5,000,000, valued at \$15,000.

No account is given in the preceding pages of the water products of the ocean front along the shore of Worcester county, although the output of oysters and fish from this part of the State reaches considerable proportions. It was found impossible to secure any satisfactory information.

The subjoined table presents in condensed form what is regarded as a fair estimate of the annual catch, and its value for each of the species mentioned.

Oysters.....	5,000,000 bush.	\$3,500,000
Shad.....	2,250,000 fish	200,000
Menhaden.....	92,000,000 lbs.	300,000
Mackerel.....	1,300,000 "	120,000
Bay Trout.....	11,100,000 "	450,000
Blue Fish.....	4,400,000 "	260,000
White Perch.....	14,000,000 "	1,120,000
Yellow Perch.....	11,000,000 "	440,000
Fresh Herring.....	100,000,000 "	1,000,000
Rock Fish.....	14,000,000 "	1,400,000
Mixed Fish, (Flounders, Pike, Pickerel, etc.).....	10,000,000 "	500,000
Hard-Shell Crabs.....	750,000 bush.	340,000
Soft-Shell Crabs.....	700,000 doz.	325,000
Terrapin.....		50,000
Clams.....	5,000,000	15,000
TOTAL.....		\$10,020,000

THE EXHIBIT IN GEOLOGY AND MINERAL RESOURCES.

The geological and mineral exhibit is representative of the geology and mineral resources of the State, and is largely from the museum of the Maryland Geological Survey. To this exhibit have been added specimens from the collections of other State organizations and institutions of learning, and many characteristic products have been supplied by prominent operators and other individuals.

The collection in systematic geology shows the great variety of geological formations represented in Maryland, and has been mainly brought together by the Maryland Geological Survey, during its investigations in the field. Some important and unique specimens have also been loaned for the present purpose from the collections of the Johns Hopkins University and The Woman's College of Baltimore, as well as by private individuals.

The collection of building and decorative stones gives a good idea of the great variety of these materials in Maryland, and has, to a considerable extent, been prepared by the leading operators in this line, although most of the more distinctly decorative stones are from the museum of the Johns Hopkins University.

The highway exhibit represents the latest phases of work conducted by the Highway Division of the Maryland Geological Survey. Views of apparatus, results of tests and materials are shown.

The collections of soils gives a very comprehensive view of the many types of soils found in Maryland suitable for every variety of crops. This exhibit is based on the soil survey now being carried on by the Maryland Geological Survey in coöperation with the Bureau of Soils of the U. S. Department of Agriculture, and has been further added to from the collections of the Maryland Agricultural College.

The clay exhibit shows the chief varieties of clays found in Maryland. They were collected by the Maryland Geological Survey as the basis for a systematic report on Maryland clays.

The collection of clay products has been furnished by the leading operators in this branch of industry, and is representative of what Maryland produces in this line.

The collection of Maryland coal is especially noteworthy. The great column of big vein coal is from the mines of the Consolidation Coal Company, and the smaller specimens from the mines of other operators in the same region.

The publications of the Maryland Geological Survey and the Maryland Weather Service form an imposing exhibit of official volumes and folios that are distributed at frequent intervals to the public.

The walls are hung with maps showing the distribution of the geological formations, the relative elevations, the drainage basins and the physiographic provinces of Maryland, also with numerous framed illustrations from the publications of the Survey; with views of mines and quarries, and with many illustrations of Maryland scenery.

The windows are hung with transparencies showing characteristic Maryland views and photomicrographs of Maryland rocks. The former is the work of J. K. Hillers, of Washington, whose transparencies of the Yosemite and the Yellowstone are widely known.

A large mural painting represents the Genius of Geology drawing away the veil from the mineral wealth of the State. The mines and quarries are seen on either hand, and in the distance Baltimore City across the Patapsco.

LIST OF LEADING OPERATORS.

COAL.

CONSOLIDATION COAL COMPANY, 44 South Street, Baltimore.
BLACK, SHERIDAN, WILSON COMPANY, 1 and 3 Chamber of Commerce, Baltimore.
GEORGE'S CREEK COAL & IRON COMPANY, 422 Equitable Building, Baltimore.
PIEDMONT MINING COMPANY, 213 E. German Street, Baltimore.
AMERICAN COAL COMPANY, 1 Broadway, New York.
MARYLAND COAL COMPANY, 1 Broadway New York.
NEW CENTRAL COAL COMPANY, 1 Broadway, New York.
BIG VEIN COAL COMPANY, 21 S. Gay Street, Baltimore.
LONACONING COAL COMPANY, 413 Water Street, Baltimore.
WATSON-LOY COAL COMPANY, Barnum, W. Va.
BLAINE COAL COMPANY, Blaine, W. Va.
G. C. PATTISON, Bloomington, W. Va.
SINCLAIR MINING COMPANY, Cumberland.
BORDEN MINING COMPANY, Frostburg.
PIEDMONT AND GEORGE'S CREEK COAL COMPANY, Frostburg.
DAVIS COAL & COKE COMPANY, Piedmont, W. Va.
PIEDMONT & CUMBERLAND COAL COMPANY, Piedmont, W. Va.
A. J. MERRILL COAL COMPANY, Westernport.

CLAY—Brick and Tile.

BALTIMORE BRICK COMPANY, 1001 Atlantic Trust Building, Baltimore.
BURNS & RUSSELL COMPANY, 10 South Street, Baltimore.
BALTIMORE RETORT AND FIRE BRICK COMPANY, Hull and Nicholson Sts., Balto.
EDWARD BENNETT ROOFING TILE WORKS, Eden and Aliceanna Sts., Balto.
MICHAEL ADAMS, JR., 17th Street, Canton, Baltimore.
ARTHUR B. NITSCH BRICK COMPANY, 301 Ramsay Street, Baltimore.
N. M. RITTENHOUSE, Jackson and Clements Streets, Baltimore.
CYRUS DAVIS, Berlin.
POTEE BROS., Brooklyn.
JAMES C. LEONARD, Cambridge.
C. T. NEEPIER, Catonsville.
H. S. BARNETT, Chestertown.
GEORGE M. COLLINS, Crisfield.
QUEEN CITY BRICK & TILE COMPANY, Cumberland.
M. H. GERMAN, Delmar, Delaware.
JOS. H. WHITE, Easton.
JOHN GILPIN, Elkton.
JOHN M. STOUTER, Emmitsburg.
PETER BROOKY, Frederick.
FREDERICK BRICK WORKS, Frederick.
JAS. E. S. PRYOR, Hagerstown.
HUGH McMICHAEL, Pocomoke City.
DAVID S. STRAYOR, Ridgely.
HUGH J. PHILLIPS, Salisbury.
F. C. TODD & CO., Salisbury.
W. S. LEWIS, Snow Hill.
ELIAS W. OURSLER, Westminster.
CONOCOHEAGUE BRICK & EARTHENWARE COMPANY, Williamsport.

CLAY—Fire Brick.

UNION MINING COMPANY, Mt. Savage.
JAS. E. WRIGHT, 1345 Columbia Avenue, Baltimore.
SAVAGE MOUNTAIN FIRE BRICK WORKS, Frostburg.
CECIL FIRE BRICK COMPANY, North East.
GREEN HILL FIRE BRICK COMPANY, North East.
WAKEFIELD FIRE BRICK COMPANY, North East.

CLAY—Enameled Brick.

MT. SAVAGE ENAMELED BRICK WORKS, Mt. Savage.

CLAY—Kaolin.

MARYLAND CLAY COMPANY, North East.

CLAY—Pottery.

EDWIN BENNETT ROOFING TILE COMPANY, Eden and Aliceanna Streets, Baltimore.

MARYLAND POTTERY COMPANY, President and Fawn Streets, Baltimore.

EDWIN BENNETT POTTERY COMPANY, 700 S. Eden Street, Baltimore.

D. F. HAYNES & SON, Nicholson and Decatur Streets, Baltimore.

M. PERINE & SONS, 1009 W. Baltimore Street, Baltimore.

GEORGE S. KALB & SON, Catonsville.

FLINT.

B. G. & J. C. SMITH, Conowingo.

GLEN MORRIS FLINT MILL COMPANY, Glen Morris

MARYLAND CLAY COMPANY, North East.

S. J. & H. C. WHITEFORD, Slate Hill, Pa.

E. E. BURNS, Whitehall.

GLASS SAND.

S. P. SPEARS, Earleigh Heights.

R. BALDWIN & CO., Waterbury.

BUILDING SAND.

FILBERT PAVING & CONSTRUCTION COMPANY, 1210 Block Street, Baltimore.

SHREVE & CO., O'Donnell's Wharf and Wood Street, Baltimore.

SILICA OR TRIPOLI.

NEW YORK SILICITE COMPANY, 40 Broadway, New York City.

IRON ORE (CARBONATE).

CHARLES E. COFFIN, Muirkirk.

IRON ORE (HEMATITE).

BLUE MOUNTAIN IRON & STEEL COMPANY, Catoctin.

MINERAL PAINTS.

J. T. WHITEHURST, Columbia Avenue, Baltimore.

W. T. DUNKEL & CO., Peach Alley, near Stockholm Street, Baltimore.

JAMES B. McNEAL & CO., 34 S. Calvert Street, Baltimore.

BUILDING-STONE—Granite.

J. H. ATKINSON, 12 North Street, Baltimore.

GUILFORD & WALTERSVILLE GRANITE CO., 52 Central Bank Bldg., Baltimore.

DANIEL LEONARD, Builders' Exchange, Baltimore.

J. H. PEDDICORD & SON, 12 North St., Baltimore.

SCHWIND QUARRY COMPANY, 302 Fidelity Building, Baltimore.

HENRY P. RIEGER & CO., 505 N. Paca Street, Baltimore.

ALBERT WEBER, 45 Builders' Exchange, Baltimore.

WERNER BROS., Ellicott City.

WM. F. WELLER, Granite.

FRANK PEACH & CO., Granite.

PERRYVILLE GRANITE COMPANY, Perryville.

McCLENNAHAN GRANITE COMPANY, Port Deposit.

BUILDING-STONE—Slate.

EXCELSIOR SLATE COMPANY, Delta, Pa.
PEACH BOTTOM SLATE COMPANY, Delta, Pa.
PEERLESS SLATE COMPANY, Delta, Pa.
PROCTOR BROS., Delta, Pa.

BUILDING-STONE—Marble.

BEAVER DAM MARBLE COMPANY, 704 Constitution Street, Baltimore.
WASHINGTON JUNCTION STONE COMPANY, Point of Rocks.
WHITEFORD GREEN MARBLE COMPANY, Whiteford.

BUILDING-STONE—Sandstone.

SENECA STONE COMPANY, 52 Central Bank Building, Baltimore.
R. A. BEALL, 14 S. Liberty Street, Cumberland.
WASHINGTON JUNCTION STONE COMPANY, Point of Rocks.
B. H. RANDOLPH, Frostburg.

CEMENT.

ROUND TOP HYDRAULIC CEMENT COMPANY, Hancock.
CUMBERLAND HYDRAULIC CEMENT COMPANY, Cumberland.

LIMESTONE.

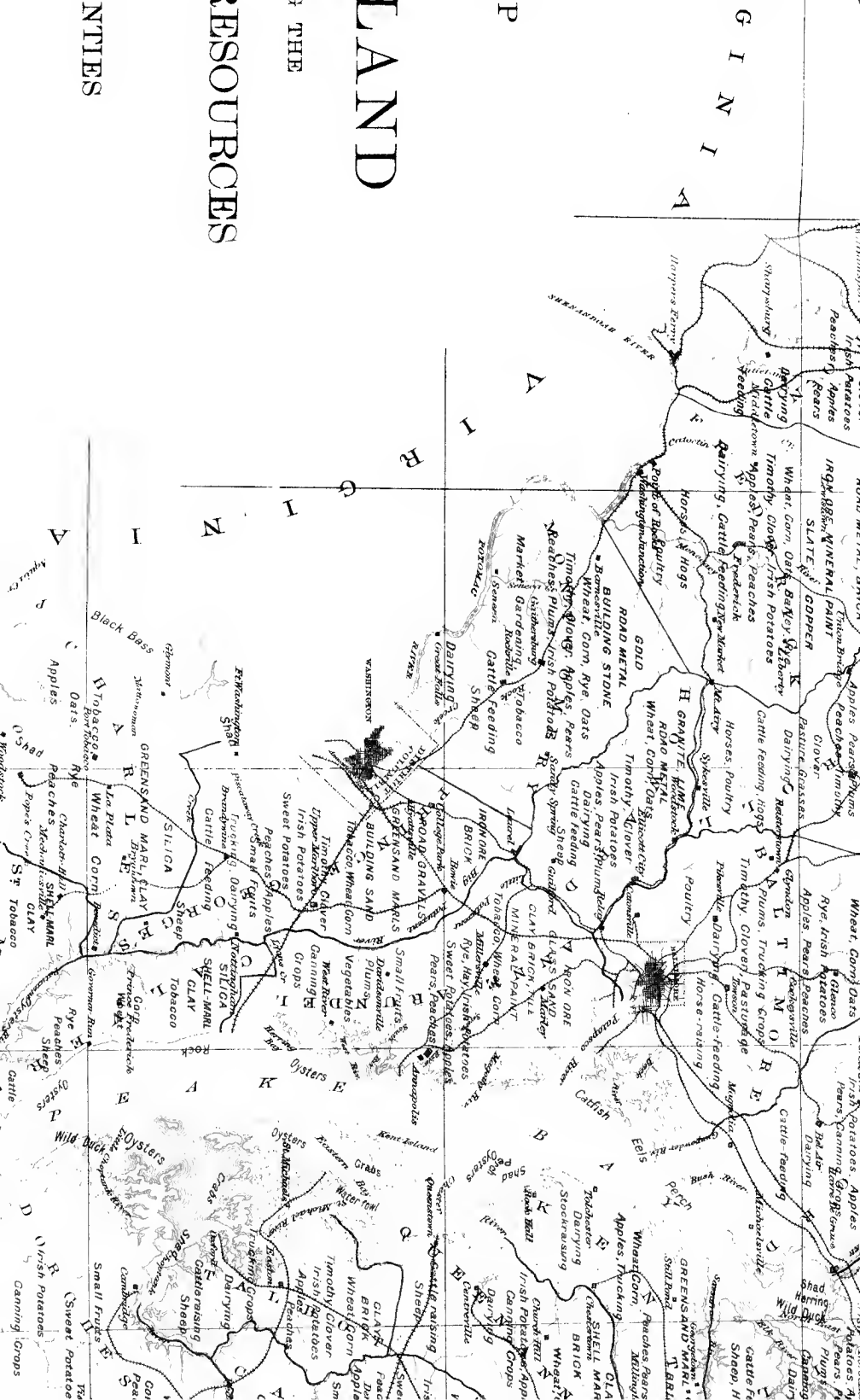
P. G. ZOUCK & CO., Cavetown.
GEO. M. ISANAGLE, Catocin.
ZEPHANIAH POTEET, Cockeysville.
JOHN L. MILLER, Cumberland.
FREDERICK CITY LIME COMPANY, LIMITED, Frederick.
CLARKSON BROS., Hagerstown.
DANIEL SUNDAY, Harmony Grove.
THE M. J. GROVE LIME COMPANY, Lime Kiln.
C. E. POOLE, Linganore.
WM. DAVIS, Marriottsville.
VERNON W. DORSEY, Marriottsville.
A. J. WALTERS, Motters.
WM. C. DITMAN, Texas.
THOS. N. LEE, Texas.
JOHN I. YELLOTT & CO., Texas.
WM. P. LINDSAY, Texas.
TEXAS LIME COMPANY, Texas.
DANIEL RODDY, Thurmont.
G. S. HAINES, Union Bridge.
GEO. R. STAUB, Wakefield.
J. W. STIMMEL, Walkersville.
WM. A. ROOP, Westminster.
S. W. BARRICK & SONS, Woodsboro.

SOAPSTONE.

MARYLAND SOAPSTONE COMPANY, Tamaqua, Pa.

MINERAL WATER.

BUENA VISTA SPRING WATER COMPANY, Baltimore.
CHATTOLANEE SPRINGS HOTEL AND WATER COMPANY, Baltimore.



CHESAPEAKE BAY

THE

LAND

RESOURCES

NTIES

